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| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
|---|-------------|----------------------|--------------------------------|------------------------|
| 10/508,924 | 09/24/2004 | Makoto Motoyoshi | 075834.00325 | 8150 |
| 33448 7590 08/29/2007 ROBERT J. DEPKE LEWIS T. STEADMAN ROCKEY, DEPKE & LYONS, LLC SUITE 5450 SEARS TOWER CHICAGO, IL 60606-6306 | | | EXAMINER NGUYEN, TRAM HOANG | |
| | | | ART UNIT 2818 | PAPER NUMBER |
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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

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Office Action Summary

Application No.

10/508,924

Applicant(s)

MOTOYOSHI ET AL.

Examiner

Tram H. Nguyen

Art Unit

2818

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 16 August 2007.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 9-14 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 9-13 is/are allowed.
- 6) ☒ Claim(s) 14 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

In response to the communications dated 08/16/2007, claims 1-3,5-7,15-19,39 and 40 have been cancelled. Therefore, claims 9-14 are pending in this application.

Allowable Subject Matter

The indicated allowability of claim 14 is withdrawn in view of the newly discovered reference(s) to Deak (US 6,724,652), and further in view of Saito et al. (US 2002/0034094;hereinafter Saito). Rejections based on the newly cited reference(s) follow.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claim 14 is rejected under 35 U.S.C. 103(a) as being unpatentable over Deak, and further in view of Saito.

Regarding **claim 14**, fig. 11 of Deak discloses a nonvolatile magnetic memory device of the type having: a first wiring (1110); a second wiring (1108) intersecting three-dimensionally with said first wiring (1110); and a tunnel magnetoresistance element (1106) which is electrically connected to said first wiring (1110) and is electrically connected to said second wiring (1108) and which is formed in the region of

intersection of said first wiring (1110) and said second wiring (1108); wherein said magnetic memory device (see fig. 11) comprises a magnetic flux concentrator (1180) of high-permeability layer formed at least on both of the lateral sides of said first wiring (1110) and on the side of said first wiring (1110) which is opposite to the side facing said tunnel magnetoresistance element (1106), with at least either of said high-permeability layer (1180) formed on the lateral sides of said first wiring (1110) projecting from said first wiring (1110) toward said tunnel magnetoresistance element (1106).

Deak fails to teach a tunnel magnetoresistance element which is electrically connected to said first wiring through a switching element. However, Fig. 1A of Saito shows a tunnel magnetoresistance element (13) which is electrically connected to the first wiring (the wiring under layer 17 in the transistor 12 illustrated in fig. 1A) through a switching element (refer to the switching transistor shown in fig. 1A). Therefore, it would have been obvious to one having an ordinary skills in the art at the time the invention was made to have a tunnel magnetoresistance element which is electrically connected to said first wiring through a switching element as taught by Saito in the NVRAM device of Deak so that the switching transistor can control the NVRAM.

Deak also fails to mention a tunnel insulating layer is sandwiched between ferromagnetic materials which change in resistance depending on whether the spin direction is parallel or antiparallel, thereby recording information. However, fig. 2B of Saito shows a detail of the tunnel magnetoresistance element wherein comprising a tunnel insulating layer (24) is sandwiched between ferromagnetic materials (21,25; see

par.[0080]) which change in resistance depending on whether the spin direction is parallel or antiparallel, thereby recording information (see par. [0080]). Therefore, it would have been obvious to one having an ordinary skills in the art at the time the invention was made to have a tunnel insulating layer is sandwiched between ferromagnetic materials which change in resistance depending on whether the spin direction is parallel or antiparallel, thereby recording information as taught by Saito in the NVRAM of Deak in order to record information to the memory.

Allowable Subject Matter

Claims 9-13 are allowed.

The following is an examiner's statement of reasons for allowance:

Regarding **claim 9**, the prior art of record alone or in combination neither teaches nor makes obvious the invention of a nonvolatile magnetic memory device of the type wherein "said magnetic memory device comprises a magnetic flux concentrator of high-permeability layer formed between said first wiring and said tunnel magnetoresistance element and ^{adjacent} ~~on~~ the lateral sides of said tunnel magnetoresistance element, with an insulating film interposed therebetween" in combination of all of the limitations of claim 9. Claims 12,13 include all of the limitations of claim 9.

Regarding **claim 10**, the prior art of record alone or in combination neither teaches nor makes obvious the invention of a nonvolatile magnetic memory device of the type wherein "a first magnetic flux concentrator of high-permeability layer formed at least on both of the lateral sides of said first wiring and on

the side of said first wiring which is opposite to the side facing said tunnel magnetoresistance element and a second magnetic flux concentrator of high-permeability layer formed between said first wiring and said tunnel magnetoresistance element and on the lateral sides of said tunnel magnetoresistance element, with an insulating film interposed therebetween" in combination of all of the limitations of claim 10. Claim 11 includes all of the limitations of claim 10.

Conclusion

THIS ACTION IS MADE FINAL. Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Tram Hoang Nguyen whose telephone number is (571)272-5526. The examiner can normally be reached on Monday-Friday, 8:30 AM –

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5:00 PM. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Steven Loke can be reached on (571)272-1657. The fax numbers for all communication(s) is (703)872-9306.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (571)272-1625.

THN
Art Unit 2818
08/24/2007

STEVEN LOKE
SUPERVISORY PATENT EXAMINER

A handwritten signature in black ink, appearing to read "Steven Loke", is written below the printed name and title.